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10/822,430	04/12/2004	John A. Krawczak	EA-00282	2554

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EXAMINER	
STULTZ, JESSICA T	

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 02/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/822,430	KRAWCZAK, JOHN A.	
	Examiner	Art Unit	
	Jessica T. Stultz	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 10-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 10-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 November 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Examiner's Comments

For applicant's information, the amendments to the drawings filed November 23, 2005 overcome the previous objection to the specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8, 10-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Notargiacomo et al US 6,879,422, herein referred to as Notargiacomo et al '422, in view of Hui et al US 6,438,148, herein referred to as Hui et al '148.

Regarding claim 1, Notargiacomo et al '422 discloses a method of transmitting an optical beam, comprising: modulating an optical beam to encode information through use of an electro optic modulator that receives a single electrical input signal (Column 13, line 34-Column 14, line 38, wherein the optical signal "b_1" is encoded by at least one electrical signal "s_1" through electro optic modulator "100", Figure 4); monitoring the encoded optical beam to measure a harmonic value (Column 11, lines 38-57, wherein the harmonic value of the optical beam is measured by optical emitter "903", Figure 4); and upon detection of the harmonic value, adjusting the electrical input signal provided to the modulator based upon the measured harmonic value (Column 13, line 34-Column 14, line 38 and Column 15, line 47-Column 16, line 29, wherein the electrical input is changed based on the desired harmonic value through feed

back signal "s_r", Figure 4), but does not specifically disclose that the modulator is an electroabsorption modulator. Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam (Column 4, line 22-Column 5, line 35 and Column 8, lines 43-51, wherein the electroabsorption modulator "34" encodes information onto the optical beam and feedback system "44" controls the electrical input "56" into the modulator, Figure 1), for the purpose of providing a modulator to match the required speed of the operation (Column 8, lines 43-51). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the electro optic modulator of Notargiacomo et al '422 to further be an electroabsorption modulator since Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam, for the purpose of providing a modulator to match the required speed of the operation.

Regarding claims 2-3, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method of transmitting an optical beam as shown above and Notargiacomo et al '422 further discloses sampling the encoded optical beam to measure the harmonic value using a photo receiver (Column 12, line 65-Column 13, line 15, wherein the optical receiver "12" is a photodiode that measures the harmonic value of the optical beam, Figure 4).

Regarding claim 4, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method of transmitting an optical beam as shown above and Notargiacomo et al '422 further discloses splitting the encoded optical beam to provide a sample signal and measuring the harmonic value of the sample signal (Column 12, line 65-Column 13, line 15, wherein the splitter is "230", Figure 4).

Regarding claim 5, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method of transmitting an optical beam as shown above and Notargiacomo et al '422 further discloses that the harmonic value is measured for a second order harmonic (Column 11, lines 38-57, wherein the second order harmonic value of the optical beam is measured by optical emitter "903" and sent back to the modulator as a feedback signal, Figure 4).

Regarding claim 6, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method of transmitting an optical beam as shown above and Notargiacomo et al '422 further discloses encoding a pilot signal onto the optical beam, monitoring the pilot signal; and adjusting the electrical input signal based upon the measured harmonic value detected in the pilot signal (Column 11, lines 38-57, wherein a pilot signal from control circuit "200" encodes the optical beam, wherein the harmonic is measured by optical emitter "903" and sent back to the modulator as a feedback signal to adjust the input electric signal "s_1" , Figure 4).

Regarding claim 7, Notargiacomo et al '422 discloses a method for transmitting information in an optical communications system, comprising: forming an output optical beam having a pilot signal component having a frequency that is outside a signal band range of an information signal component provided to have information encoded thereon (Column 11, lines 38-57 and Column 14, lines 18-58, wherein a pilot signal "s_f" provided from the oscillator "7" has a frequency lower than the lower limit of the frequency band of the modulating signal "s_2", wherein the harmonic of the pilot signal is measured by optical emitter "903" and sent back to the modulator as a feedback signal, Figure 4); encoding information onto the information signal component of the output optical beam through use of an electro optic modulator (Column 13, line 34-Column 14, line 38, wherein the optical signal "b_1" is encoded by electrical signals "s_1"

and "s_2" through electro optic modulator "100", Figure 4); monitoring the pilot signal component output from the modulator to determine the magnitude of a harmonic (Column 11, lines 38-57 and Column 14, lines 18-58, wherein the harmonic value of the pilot signal is measured by optical emitter "903", Figure 4); correlating the magnitude of the harmonic with an optimum electrical signal value to be input to the modulator to reduce the magnitude of the harmonic; and adjusting an electrical input to the modulator to equal the optimum electrical signal value (Column 13, line 34-Column 14, line 38 and Column 15, line 47-Column 16, line 29, wherein the electrical input is changed based on the desired harmonic value through feed back signal "s_r", Figure 4), but does not specifically disclose that the modulator is an electroabsorption modulator. Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam (Column 4, line 22-Column 5, line 35 and Column 8, lines 43-51, wherein the electroabsorption modulator "34" encodes information onto the optical beam and feedback system "44" controls the electrical input "56" into the modulator, Figure 1), for the purpose of providing a modulator to match the required speed of the operation (Column 8, lines 43-51). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the electro optic modulator of Notargiacomo et al '422 to further be an electroabsorption modulator since Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam, for the purpose of providing a modulator to match the required speed of the operation.

Regarding claim 8, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method for transmitting information as shown above and Notargiacomo et al '422 further discloses that the method includes measuring the pilot signal component to determine the

magnitude of a harmonic produced by encoding a pilot signal with the EAM (Column 11, lines 38-57 and Column 14, lines 18-58, wherein the harmonic of the pilot signal "s_f" is measured by optical emitter "903" and sent back to the modulator as a feedback signal, Figure 4)

Regarding claims 10-11, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method for transmitting information as shown above and Notargiacomo et al '422 further discloses sampling the harmonic using a photo receiver (Column 12, line 65-Column 13, line 15, wherein the optical receiver "12" is a photodiode that measures the harmonic value of the optical beam, Figure 4) and adjusting the electrical input to minimize the second order harmonic based upon the sampled harmonic (Column 11, lines 38-57, wherein the second order harmonic value of the optical beam is measured by optical emitter "903" and sent back to the modulator as a feedback signal, Figure 4).

Regarding claim 12, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a method for transmitting information as shown above and Notargiacomo et al '422 further discloses adjusting the electrical input within a set of voltages corresponding to a range of values around a minimum harmonic value (Column 11, lines 38-57, wherein the voltages are generated by control circuit "200" to operate around a minimum value of the second harmonic, Figure 4).

Regarding claim 13, Notargiacomo et al '422 discloses a control circuit for performing a method, comprising: modulating an optical beam to encode information through use of an electro optic modulator provided with a single electrical input signal (Column 13, line 34-Column 14, line 38, wherein the optical signal "b_1" is encoded by at least one electrical signal "s_1" through electro optic modulator "100", Figure 4); monitoring the encoded optical beam to measure a harmonic value (Column 11, lines 38-57, wherein the harmonic value of the optical beam is

measured by optical emitter "903", Figure 4); upon detection of the harmonic value, adjusting the electrical input signal provided to the modulator based upon the measured harmonic value (Column 13, line 34-Column 14, line 38 and Column 15, line 47-Column 16, line 29, wherein the electrical input is changed based on the desired harmonic value through feed back signal "s_r", Figure 4), but does not specifically disclose that the modulator is an electroabsorption modulator. Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam (Column 4, line 22-Column 5, line 35 and Column 8, lines 43-51, wherein the electroabsorption modulator "34" encodes information onto the optical beam and feedback system "44" controls the electrical input "56" into the modulator, Figure 1), for the purpose of providing a modulator to match the required speed of the operation (Column 8, lines 43-51). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the electro optic modulator of Notargiacomo et al '422 to further be an electroabsorption modulator since Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam, for the purpose of providing a modulator to match the required speed of the operation. Regarding that part of the claim stating "a computer readable medium having program instructions to cause a device to perform a method", that part of the claim has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190

USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Regarding claims 14-15, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a control circuit for performing a method as shown above and Notargiacomo et al '422 further discloses tracking a correlation of the harmonic value and the voltage level of the electrical input signal to determine a voltage input level that correlates to the lowest occurrence of the harmonic and applying an adjusted biased electrical input signal component to the input optical beam based upon the determined electrical input level that correlates to the lowest occurrence of the harmonic (Column 11, lines 38-57, wherein the voltages are generated by control circuit "200" to operate around a minimum value of the second harmonic, Figure 4).

Regarding claims 16-17, Notargiacomo et al '422 and Hui et al '148 disclose and teach of a control circuit for performing a method as shown above and Notargiacomo et al '422 further discloses adjusting the electrical input signal component to minimize the harmonic and limit the harmonic to within 5% of a lowest occurrence of the harmonic (Column 11, lines 38-57, wherein the voltages are generated by control circuit "200" to operate around a minimum value of the second harmonic, Figure 4).

Regarding claim 18, Notargiacomo et al '422 discloses an optical transmission system, comprising: an electro optic modulator configured to encode information in an optical beam and to modulate the optical beam according to a single electrical input signal (Column 13, line 34-Column 14, line 38, wherein the optical signal "b_1" is encoded by at least one electrical signal "s_1" through electro optic modulator "100", Figure 4); and a monitoring component configured to measure a harmonic value in the encoded optical beam (Column 11, lines 38-57, wherein the

harmonic value of the optical beam is measured by optical emitter "903", Figure 4); and to calculate an adjustment in the electrical input signal, to be applied to the modulator so as to reduce the measured harmonic (Column 13, line 34-Column 14, line 38 and Column 15, line 47-Column 16, line 29, wherein the electrical input is changed based on the desired harmonic value through feed back signal "s_r", Figure 4), but does not specifically disclose that the modulator is an electroabsorption modulator. Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam (Column 4, line 22-Column 5, line 35 and Column 8, lines 43-51, wherein the electroabsorption modulator "34" encodes information onto the optical beam and feedback system "44" controls the electrical input "56" into the modulator, Figure 1), for the purpose of providing a modulator to match the required speed of the operation (Column 8, lines 43-51). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made for the electro optic modulator of Notargiacomo et al '422 to further be an electroabsorption modulator since Hui et al '148 teaches of using an electroabsorption modulator in a feedback system to encode information onto an optical beam, for the purpose of providing a modulator to match the required speed of the operation.

Regarding claim 19, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses that the monitoring component is configured to measure a harmonic value of a second order harmonic (Column 11, lines 38-57, wherein the second order harmonic value of the optical beam is measured by optical emitter "903" and sent back to the modulator as a feedback signal, Figure 4).

Regarding claim 20, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses that the monitoring component is a signal processing card (Column 11, lines 38-57, wherein the signal of the of the optical beam is processed by optical emitter "903", which processes the signal and is therefore a signal processing card, Figure 4).

Regarding claim 21, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses a photo receiver positioned to receive an output optical beam from the modulator (Column 12, line 65-Column 13, line 15, wherein the optical receiver "12" is a photodiode that measures the harmonic value of the optical beam, Figure 4).

Regarding claim 22, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses an optical splitter to split the output optical beam and to direct a sample signal to the photo receiver (Column 12, line 65-Column 13, line 15, wherein the splitter is "230" which directs a sample signal to photodiode "12", Figure 4).

Regarding claims 23-24, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses that the sample signal is 1% of the output optical beam, wherein the photo receiver is positioned to receive the sample signal (Column 12, line 65-Column 13, line 15, wherein the splitter is "230" which directs a sample signal comprising 1% of the output optical beam to photodiode "12", Figure 4).

Regarding claims 25-26, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses an adjustment module to adjust the electrical input signal based upon ambient or device generated temperature changes (Column 2, line 5-20, wherein the applied voltage changes with temperature).

Regarding claims 27-28, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses an adjustment module to adjust the electrical input signal in greater or lesser amounts as the harmonic trends away or towards a lowest occurrence of the harmonic (Column 11, lines 38-57, wherein the voltages are generated by control circuit "200" to operate around a minimum value of the second harmonic, Figure 4).

Regarding claim 29, Notargiacomo et al '422 and Hui et al '148 disclose and teach of an optical transmission system as shown above and Notargiacomo et al '422 further discloses an optical source for providing the optical beam to the modulator (Column 11, lines 58-62, wherein the optical source is radiation source "240", Figure 4).

Response to Arguments

Applicant's arguments filed November 23, 2005 have been fully considered but they are not persuasive.

Specifically, regarding independent claims 1, 13, and 18, applicant argues that the Notargiacomo et al '422 reference does not disclose that the modulator receives only one electrical input signal. However, it is not disclosed that the modulator receives only one electrical input signal. Notargiacomo et al '422 discloses that the modulator receives at least a single

electrical input signal (Column 13, line 34-Column 14, line 38, wherein the optical signal "b_1" is encoded by at least one electrical signal "s_1" through electro optic modulator "100", Figure 4). Specifically, regarding independent claim 7, applicant argues that the Notargiacomo et al '422 reference does not disclose a pilot signal component having a frequency that is outside a signal band range of an information signal component provided to have information encoded therein. However, Notargiacomo et al '422 discloses a method for transmitting information in an optical communications system, comprising: forming an output optical beam having a pilot signal component having a frequency that is outside a signal band range of an information signal component provided to have information encoded thereon (Column 11, lines 38-57 and Column 14, lines 18-58, wherein a pilot signal "s_f" provided from the oscillator "7" has a frequency lower than the lower limit of the frequency band of the modulating signal "s_2", wherein the harmonic of the pilot signal is measured by optical emitter "903" and sent back to the modulator as a feedback signal, Figure 4).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gronbach 2005/0190428 and Franco et al 6,925,265 are cited as having some similar structure to the claimed invention since they disclose optical transmission systems with modulators including feedback systems to control the electrical input to the modulators.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessica T. Stultz whose telephone number is (571) 272-2339. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jessica Stultz
Patent Examiner

JORDAN SCHWARTZ
PRIMARY EXAMINER

AU 2873
January 27, 2006